

amount of new knowledge is being produced." In order to achieve this major goal, the authors have organized their text into three major sections: "General Principles of Microbiology"; "Sanitary and Industrial Microbiology"; and "Disease-Producing Microorganisms—Pathogenic Microbiology," encompassing thirty short chapters.

Unfortunately, the authors have not achieved their objective of updating the text. The references are narrow and for the most part, outdated. The illustrations are definitely in need of improvement and updating; for example, the illustrations of the electron microscope, the modern binocular microscope, and so on are not reflective of the modern instrumentation available to microbiologists. The taxonomic treatment used in the text is from *Burgey's Manual* seventh edition, rather than the newer eighth edition. In summary, the book may be marginally acceptable for use in some microbiology courses, but its ability to contribute to a modern up-to-date microbiology course will be minimal.

The laboratory manual is organized into seven major sections: "Basic Principles of Microbiology"; "Methods and Techniques for Isolation, Pure Culture Studies, and Classification of Bacteria"; "Soil and Sanitary Microbiology"; "Microbial Genetics"; "Pathogenic Microbiology"; "Serological Procedures"; and "Viruses, Molds, Parasitic Animals, and Identification of Unknowns." Within these major sections are 26 laboratory exercises, all fairly easy to perform and requiring a minimum of equipment. Each laboratory consists of the typical cookbook list of materials required for each student, a step-by-step procedure, brief list of questions, and blank worksheets.

One can only judge the worth of a laboratory manual after having taught from it; but in my opinion, the manual will be only of value in the most basic microbiology laboratory and then the value will be marginal. The major disappointment in the manual is the lack of any attempt to provide an inquiry approach or indepth quantitative analysis of laboratory data.

Vernon L. Avila
San Diego State University
San Diego, Calif.

Related Fields

HUMAN PHYSIOLOGY: THE MECHANISMS OF BODY FUNCTION, by Arthur J. Vander, James H. Sherman, and Dorothy S. Luciano. 2nd ed., 1975. McGraw-Hill Book Co. (1221 Ave. of the Americas, New York 10020). 621 p. \$14.95 hardback.

This college level textbook, now in its second edition, will quickly establish itself as one of the most popular introductory textbooks available today. The content is much the same as other basic

physiology textbooks, but the framework and the presentation are strikingly different.

Using control theory as a background, the authors have organized the material into three sections to emphasize the fundamental features of cell functions. Section 1, "Basic Cell Functions," is an extensive treatment of cell physiology; section 2, "Biological Control Systems," analyzes the precise mechanisms specialized cells use to control cell functions; and the third section, "Coordinated Body Functions," integrates the material from the preceding sections.

The text is clearly written and the content follows a logical sequence. The authors are thorough in their discussions and skillful in clarifying problem areas (for example, kidney physiology and membrane potentials). A major attribute of the book are the supportive figures (more than 500) and the tables.

Readers familiar with the first edition will find that the text has been reset in a new type and several sections have been rewritten and expanded. The index has also been expanded. One major change is the condensation and re-writing of the chapters "Electrical Properties of Cells" and "Neural Control Mechanisms" into one chapter, logically placed in the second section of the book.

This book is highly recommended for anyone studying or reviewing introductory physiology.

Karen Brelford
Columbia, Md.

DYNAMIC ANATOMY AND PHYSIOLOGY, by Ben Pansky. 1975. Macmillan Publishing Co. (866 Third Ave., New York 10022). 694 p. \$12.95.

With the current spate of new books and revised editions in the area of anatomy and physiology, one's first impression is that this contribution by Pansky must at the very least be redundant and at the most be rather foolhardy. The goodly number of excellent publications in this subject impels the reader to examine any new attempt with a hypercritical eye. Nevertheless, this new textbook stands close scrutiny very well; it is a well-conceived and attractively styled first edition. It follows a logical organization of cell and tissue considerations in the early chapters; then the organ-system sequence of chapters follows. Within each organ-system, structure is elucidated first, function is then explained, and, finally, in most chapters, the system is discussed with respect to select examples of well-known pathologies. There is an abundance of well-executed diagrams accompanying each topic. Up-to-date findings within most areas are included and the most modern terminology and quantitative units are employed. Special or unique features include chapters on aging, development, and defense

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mechanisms. Also, worthy of note are the appended sections on prefixes, suffixes, and combining forms plus a novel seven-page atlas of regional anatomy.

This book should prove to be a fine competitive publication in the field of combined anatomy and physiology. It is intended for college-level readership, but would furnish excellent supplementary reading material in advanced secondary school courses.

Raymond E. Henzlik
Ball State University
Muncie, Ind.

Physiology

CONSCIOUSNESS AND CREATIVITY: TRANSCENDING SCIENCE, HUMANITIES, AND THE ARTS, by Bill Romey. 1975 Ash Lad Press (P.O. Box 396, Canton, N.Y. 13617). 278 p. \$5.00 softback.

Bill Romey's latest book is must reading for folks interested in student-centered education. For that matter, it is good reading for anyone interested in any kind of education. The book is a collection of essays, many of which are stream-of-consciousness commentaries on a wide range of topics. The essays playfully take the reader through things that have been on Romey's mind since the 1972 publication of *Risk, Trust, Love: Learning in a Humane Environment*.

The essays are grouped into five overlapping sections: "A Flow of Consciousness," "The Ash Lad Hypothesis and Other Ideas in Creativity," "Hunting for Routes to Knowing," "Dealing with Institutional Inhibitors to Consciousness, Creativity and Knowing," and "Growing Pains." The flavor of the book immediately comes through in such essay titles as "Teaching as Consciousness Therapy," "Creative Activity Transcends the Disciplines," and "Models, Fantasy and Multiple Working Hypotheses."

Romey brings a rich background to his writing. He completed an undergraduate language major, served in the Navy, did graduate work in geology, taught both geology and science education at Syracuse University, did research in Norway, worked for three years on the staff of the Earth Science Curriculum Project (ESCP), and is now chairman of the Department of Geology and Geography at St. Lawrence University in Canton, N.Y. This background is repeatedly reflected in his writing as are his experiences with his wife, children, friends, and associates over the years.

As I reflect upon the book, I find that it is "gentle on my mind." Romey's comfortable mixtures of reminiscing, soul searching, and "serious" thought contribute to his aim of sharing himself with the reader. He wants readers to accompany him through his triumphs, despairs, and experiences so as to share with the process of his own consciousness and creativity. If you are looking for stuffy pontifications and elaborate rationalizations about the way things are or ought to be in education, this book may not be for you. If you are, on the other hand, interested in sharing in the life of a fellow science teacher struggling with himself and others to develop more humane and student-centered educational experiences, by all means, read this book. It may be not only a book but also a mirror reflecting your own expanding consciousness and creativity. Besides all that, much of the reading of Romey's book is just plain fun!

Elwood B. Ehrle
Mankato State University
Mankato, Minn.

Zoology

THE WILD CANIDS: THEIR SYSTEMATICS, BEHAVIORAL ECOLOGY, AND EVOLUTION, ed. by Michael W. Fox. 1975. Van Nostrand Reinhold Co. (450 W. 33rd St., New York 10001). 496 p. \$19.95 hardback.

The contributors of this anthology are distinguished scientists specializing in behavioral psychology, ecology, and animal and human sociology. Topics covered range from chromosomes of the Canidae to hunting techniques, methods of communication, and

evolution of social behavior. The emphasis is on behavior and ecology, but there are chapters on classification, genetics, and biochemistry.

The Wild Canids provides the most thorough coverage of the subject available. It combines original research in field and laboratory. It will inform the lay naturalist and function as a reference for field biologists, ethologists, and ecologists. The discussion of habitat will be useful in wildlife management and conservation; and because it mentions lines of research still open to us, it could stimulate research into areas not yet understood.

The book has an extensive list of references in addition to an author and subject index. Knowledgeably and attractively written, it belongs in the reference library of any serious lay naturalist or professional biologist.

Richard H. Kruse
Ankeny High School
Ankeny, Iowa

PRACTICAL STUDIES OF ANIMAL DEVELOPMENT, by F. S. Billet and A. E. Wild. 1975. Halsted Press (605 Third Ave., New York 10016). 259 p. \$15.00 hardback.

This book will be a valuable reference for teachers of courses that utilize animal embryos and for students wishing to do projects. It could be used as a laboratory manual only if it were extensively supplemented with local material. The book's emphasis is on methodology; it assumes the availability of a standard embryology text. Techniques are clearly and completely outlined. The use of British species is a disadvantage, as are the restrictions placed on the authors by the British Cruelty to Animals Act. Chapters are devoted to laboratory experiment and tool-making; echinoderms and ascidians; molluscs, annelids, and nematodes; insects and crustaceans; fish; amphibia; birds; and mammals. Each chapter includes a list of selected references.

Norman S. Kerr
University of Minnesota
Minneapolis

ESSENTIAL INVERTEBRATE ZOOLOGY, by M. S. Laverack and J. Dando. 1974. Halsted Press (605 Third Ave., New York 10016). 205 p. Price not given.

The purpose of this book is indicated both by the title and in the introduction ("Apologia"), where the authors state that they have tried to compress the materials of standard textbooks on invertebrate zoology into concise form. This purpose has been attained with a high degree of success, and the book is a valuable, convenient reference for both teachers and students. Classification and anatomy are succinctly delineated both by description and well-exe-